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SPACE GATEWAY SUPPORT (SGS) **SGS-12 51 00.00 99 (April 2006)**

Preparing Activity: SGS-DE **Superseding SGS-11670J (February 2005)**

SGS GUIDE SPECIFICATIONS

References are NOT in Agreement with UMRL dated 01 April 2006

Revised throughout - changes not indicated by CHG tags
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SECTION 12 51 00.00 99

OFFICE FURNITURE
04/06

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NOTE: This guide specification covers the requirements for interior consoles, credenza, and mapboard systems.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.
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PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Consoles, credenza, and mapboard systems shall be supplied by specialty manufacturers in business specifically to serve the industrial/utility control room environment and shall have at least 150 similar systems in service throughout North America.

1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy, Air Force, and NASA projects.

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The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Materials, Equipment, and Fixture Lists shall be submitted for consoles and mapboard systems including manufacturer's style or catalog numbers, where applicable, specification and drawing reference numbers, warranty information, and fabrication site information.

In addition, customer references (minimum of ten, including contact information) shall be supplied where similar equipment has been installed during the last five years, along with customer contact information.

SD-02 Shop Drawings

Detailed Drawings of Consoles and credenza, including ergonomic design parameters and dimensions, and mapboard system construction.

SD-03 Product Data

Manufacturer's Catalog Data shall be submitted for the following items:

Consoles: Material description for all major material components of consoles. Recommended spare parts data (both startup and operational).

Credenza: Material description for all major material components of consoles. Recommended spare parts data (both startup and operational).

Mapboard Systems including the following:

a. Proposed framing material description
b. Dynamic mapboard lights
c. Dynamic mapboard digital displays for power quantities

d. Power and signal requirements for above dynamic indications
e. Scalability Requirements Explanation
f. Temporary Mapboard Marking Requirement Explanation
g. Future Dynamic Mapboard Conversion Explanation
h. Mapboard Maintenance Proposal

SD-04 Samples

Manufacturer's Color Charts, Color and Finish Samples shall be submitted as in this section. As a minimum, the following samples shall be submitted prior to placement of final order:

Consoles including the following:

a. Framing material
b. Panel/surface material
c. Laminate materials
d. Fabric materials, if any
e. Fasteners, typical
f. Hardware (drawer handles, etc.)

Credenza including the following:

a. Framing material
b. Panel/surface material
c. Laminate materials
d. Fabric materials, if any
e. Fasteners, typical
f. Hardware (drawer handles, etc.)

Mapboard Systems: shall be submitted prior to placement of mapboard order.

a. Framing material
b. Sample tile(s) depicting actual mapboard image at actual mapboard scale and level of detail
c. Dynamic status lights (RED/GREEN)
d. Dynamic digital power quantity display (typical)

SD-07 Certificates

Certificates shall be submitted for Consoles, Credenza, and Mapboards certifying that loading requirements specified in this section have been tested and met.

SD-08 Manufacturer's Instructions

Manufacturer's Instructions shall be submitted for the Consoles, Credenza and Mapboard Systems showing necessary installation instructions. Special notices shall details sequences of assembly that are mandatory, hazards, and safety precautions in assembly or in operational use.

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals, including recommended spare parts, shall be submitted for the following equipment:

Consoles

Credenza
Mapboard Systems

1.3 QUALIFICATIONS FOR MANUFACTURERS

Material and equipment to be provided under this specification shall be a standard catalog product, or custom modification thereof, of a manufacturer regularly engaged in the manufacture of consoles or mapboard systems, as appropriate. Equipment shall be of the latest design and shall meet all requirements as defined by the drawings and this specification. Manufacturer shall have been in specialty business supplying consoles or mapboard systems, as appropriate, especially designed and installed in control room applications for at least two years.

1.4 DELIVERY, HANDLING, AND STORAGE

Subassemblies of system console furniture and mapboard systems shall be delivered, stored, handled, and installed in a manner that will not damage the equipment. Equipment shall be stored indoors in the original unbroken protective covering and shipping container, in a clear, dry, and ventilated location.

PART 2 PRODUCTS

2.1 CONSOLES

2.1.1 General

"System furniture", i.e. mass-produced, commercially available workstations, shall not be acceptable product to meet intent of this specification. Consoles shall be constructed as robust, stand-alone consoles to meet the specific spatial and functional requirements as depicted on the drawings. They shall be a single-tier design for use in round-the-clock, industrial/utility control room applications. Ergonomic factors such as operator fatigue, discomfort, distraction, repetitive stress syndrome shall be incorporated into console design.

Prior to commence3mnet of any work, subcontractor must submit all pertinent data relating toMaterials, Equipment, and Fixture Lists to be incorporated into the work; including, but not limited to:

Manufacturer's Catalog Dataincluding:
Manufacturer's Instructions for installation and operation
Consoles
Credenza
Mapboard Systems
Detailed Drawings of Consoles and credenza

Samples including detailed information relating to:
Manufacturer's Color Charts, Color and Finish Samples
Consoles
Credenza
Mapboard Systems

2.1.2 Structural and Finishes

Structural materials shall be aluminum or steel framing such that the finished console shall be capable of supporting a 300 pound per square foot load on the work surface. Wood structural framing, fasteners, or wooden

pins for fastening various members shall not be acceptable. Console dimensions shall be as shown on the drawings. All components shall be pre-drilled with pre-tapped holes to permit easy field assembly. Equipment and accessory mounts shall be designed for easy repositioning from bay to bay.

Panels shall be constructed of durable wood core with a surface high-pressure plastic laminate or metal. All fastening hardware and console framing shall be concealed after final assembly. Fastening hardware shall be adjustable such that console may be field assembled to have proper alignment, uniform gaps and spacing between members, straight lines and surfaces.

Structural steel framing shall be finished with an electrostatic powder coated finish. Aluminum framing may be left unfinished if not exposed. Surface finishes shall be fabric or high-pressure plastic laminate (Contractor-specified type/design) with wood trim as shown on the drawings.

2.1.3 Equipment Enclosure and Protection

Consoles shall be designed to enclose all computer and electronic equipment, including wiring, in a solid integrated, but well ventilated, housing. Consoles shall protect equipment from dust, accidental kicks, knocks, and normal control room accidental collisions. Front, rear, and upper lids shall be removable or hinged to permit easy operator access to the console interior for equipment adjustments, connections, or removal.

Computer monitors shall also be enclosed with glare-resistant, tempered glass side-hinged bezels designed to reduce operator fatigue while permitting operator access, as needed, to monitor controls.

2.1.4 Console Features

Each operator console shall be provided with the following features:

a. Custom nosing with headset-jack openings and pencil drawer storage.

b. Pull-out keyboard trays mounted under the work surface so as to minimize interference with the operator in either the extended or retraced position. Keyboard shall be sufficiently wide to permit placement of a nominal mouse pad to facilitate mouse operations. Tray shall be adjustable in height and tilt to permit ergonomically correct hand positions for operator when seated.

c. Task lighting with individual fully dimmable controls for each operator. Light source shall be either fluorescent or halogen, integrated into the console such that the light is shielded from the operator's eyes.

d. Rear pull-out storage drawer(s) in each console.

e. Integral standard 19" rack-mounting for equipment in specific bays as shown on drawings.

f. Forced ventilation fans, as required, to provide adequate cooling to electronic equipment.

g. Key locks shall be provided on all cabinets and file drawers, group keyed for each operator console (i.e. one key per operator

console).

h. All drawers shall have heavy-duty, ball bearing glides.

2.1.5 Console Electrical Wiring

All electrical, radio, intercom, computer network, and telephone wiring shall be capable of being completely contained within each console. Wiring entrances to console shall be bottom access, entering console from below via raised computer floor. Power wiring for consoles shall be from a source supplied by an uninterruptible power supply (UPS) system. Consoles shall have integral raceways for power wiring to duplex and/or quadriplex 115 volt, 15 ampere receptacles throughout the console, adequate in number to support all integral electronic equipment, as well as exterior receptacles in which to connect external equipment.

2.1.6 Final Assembly and Shipment

Prior to shipment, each console shall be fully assembled at the factory to ensure all parts fit properly and are fully operational. This final assembly may be witnessed by the Contractor's representative at no additional cost. Each console shall then be disassembled, wrapped, and packaged in non-returnable wooden shipping crates sized appropriately for each component piece. Copies of assembly instructions shall be shipped with each console and also separately with other submittals.

2.2 CRADENZA

2.2.1 General

"System furniture", i.e. mass-produced, commercially available computer workstations, shall not be acceptable product to meet intent of this specification. Credenzas shall be constructed as robust, stand-alone storage table to meet the specific spatial and functional requirements as depicted on the drawings.

2.2.2 Structural and Finishes

Structural materials shall be aluminum or steel framing such that the finished credenza shall be capable of supporting a 300 pound per square foot load on the work surface. Wood structural framing, fasteners, or wooden pins for fastening various members shall not be acceptable. Dimensions shall be as shown on the drawings. All components shall be pre-drilled with pre-tapped holes to permit easy field assembly. Equipment and accessory mounts shall be designed for easy repositioning.

Panels shall be constructed of durable wood core with a surface high-pressure plastic laminate or metal. All fastening hardware and framing shall be concealed after final assembly. Fastening hardware shall be adjustable such that credenza may be field assembled to have proper alignment, uniform gaps and spacing between members, straight lines and surfaces.

Structural steel framing shall be finished with an electrostatic powder coated finish. Aluminum framing may be left unfinished if not exposed. Surface finishes shall be fabric or high-pressure plastic laminate (Contractor-specified type/design) with wood trim as shown on the drawings.

2.2.3 Credenza Features

Each operator credenza shall be provided with the following features:

a. Custom nosing.

b. Rotating two tier "Lazy Susan" shelving at both ends of cadenza. These shelves shall be constructed to store 3-ring binders style manuals and shall have vertical fins at 4 equal locations. These shall slope back-up to the center rotating point and help keep binders from tipping over and/or falling off rotating shelf.

c. Center shelving shall be adjustable the full length of both sides.

h. All shelving shall have heavy-duty hardware and ball bearing glides.

2.2.4 Credenza Electrical Wiring

All electrical wiring shall be capable of being completely contained within credenza. Wiring entrances to credenza shall be bottom access, entering credenza from below via raised computer floor. Power wiring shall be from a source supplied by an uninterruptible power supply (UPS) system. Credenzas shall have integral raceways for power wiring to duplex and/or quadriplex 115 volt, 15 ampere receptacles throughout, adequate in number to support exterior receptacles in which to connect external equipment.

2.2.5 Final Assembly and Shipment

Prior to shipment, each credenza shall be fully assembled at the factory to ensure all parts fit properly and are fully operational. This final assembly may be witnessed by the Contractor's representative at no additional cost. Credenza shall then be disassembled, wrapped, and packaged in non-returnable wooden shipping crates sized appropriately for each component piece. Copies of assembly instructions shall be shipped with credenza and also separately with other submittals.

2.3 MAPBOARD

2.3.1 General

The mapboard shall be designed by a mapboard vendor who is in the business of supplying industrial/utility control room mapboards with at least 150 prior installations. Mapboard shall be of either a plastic mosaic tile structure or a magnetic metal graphic tile. Steel pegboard type mapboard design is not acceptable. Mapboard shall initially be of a "static" design with provisions for future "dynamic" design features, controlled by SCADA, to be field installed.

Subcontractor shall propose mapboard display system and vendor. Contractor reserves the right to approve or disapprove final selection of mapboard vendor based on aggregate total cost estimated for 10 years of operation and maintenance, including Contractor labor, ease of making temporary and permanent changes, readability from operator consoles, and ease of converting from static to dynamic mapboard while remaining operational.

2.3.2 Structural Framing and Future Video Display Panels

The structural framing of the mapboard shall be designed as a smooth curved

or a segmented wall to be constructed in accordance with dimensions specified on the drawings (approximate dimensions are 42 feet wide by 12 feet high). Mapboard footprint shall be no larger than that shown on the drawings. Mapboard vendor's shop drawing submittals shall depict how specific footprint requirements shall be met.

Framing shall be sized and braced adequately to support lateral forces of a concentrated 300-pound load without damage. Cutout framing for future imbedded video display panels shall be provided with exact framing dimensions to be supplied during submittal process. Approximate dimensions for imbedded video shall be adequate to install a 2 x 2 matrix of 40 inch (diagonal measurement) video display panels on each end of the mapboard, as shown on the drawings.

2.3.3 Mapboard Display - Specific Requirements

The mapboard shall depict a single-line diagrammatic representation (to an approximate geographic orientation and scale) of the Cape Canaveral Air Force Station (CCAFS) power transmission and distribution system. An electronic file (AutoCad or Microstation formatted) representation shall be supplied by the Contractor to facilitate manufacture of the mapboard display. Electronic file shall be provided to Contracting Officer and Project Architect for proper documentation and archiving. Mapboard shall meet the following requirements:

2.3.3.1 Mapboard Image

Actual mapboard image should look exactly as the image on the electronic file when brought up to the mapboard scale. Image shall include a geographic outline of the CCAFS island boundary and surrounding waters.

2.3.3.2 Scalability

Since it is mandatory that the entire CCAFS power system be capable of being represented on this mapboard, scaling portions or all of the entire mapboard may be required. Mapboard vendor shall, as a submittal, provide written explanation and diagrams as to how this requirement will be met.

2.3.3.3 Temporary Mapboard Operating Notations

Mapboard shall be capable of being marked or tagged to indicate temporary operating conditions or permanent changes not yet incorporated into mapboard revision. As a minimum, circuit breakers and switches shall be capable of being notated as closed or open (RED=CLOSED; GREEN=OPEN). Mapboard vendor shall provide, as a submittal, written explanation as to how this requirement will be met (e.g. magnetic markers or pens, erasable marker pens, tape, etc.)

2.3.3.4 Mapboard Updating Performance Requirement

Mapboard display shall be easily updated to reflect additions, demolitions, and reconfigurations of the mapboard image. These permanent changes shall be capable of being field installed by Contractor's personnel with labor not to exceed 0.25 manhours per square foot of surface area changed or affected by the change.

2.3.3.5 Future Dynamic Display Capabilities

Mapboard shall be capable of adding field-installed dynamic electronic

indicators (driven by Contractor's SCADA system) to provide breaker/switch status (RED=CLOSED; GREEN=OPEN), as well as digital indicators of various power quantities (watts, VARS, voltage, amps, etc.). Mapboard vendor shall, as a submittal, describe how mapboard may be transitioned from a "static" to "dynamic" mapboard while remaining operational, including required field installation instructions and suggested parts and wiring required for field installation.

2.3.3.6 Mapboard Maintenance Agreement

Mapboard vendor shall, as a submittal, explain how permanent changes shall be accomplished including what resources are required to implement the change. If revised tiles, or groups of tiles, are required from the mapboard vendor to meet this performance requirement, then a proposal shall be submitted from the mapboard vendor describing a proposed "indefinite quantity, indefinite delivery" (IDIQ) contractual arrangement that defines cost per change plus cost per tile (or other proposed cost unit), along with quantity discounts and any annual fixed costs. Such proposal shall also describe proposed schedule delivery for revised tiles and any other requirements that must be met by the Contractor.

PART 3 EXECUTION

3.1 INSPECTION AND SITE ASSEMBLY PREPARATION

Prior to uncrating, shipping crates shall be inspected for damage. Crating damage reported to shipper and manufacturer prior to uncrating. After uncrating, any damaged components shall be reported to the manufacturer prior to assembly. Components damaged or broken during shipment shall be replaced at no additional cost to the Contractor.

3.2 MANUFACTURER'S FIELD ASSEMBLY REPRESENTATIVE

During actual console and mapboard assembly, as a minimum, Subcontractor shall arrange for the services of a manufacturer's representative to supervise field assembly of consoles and mapboard systems. Subcontractor shall supply appropriate labor to assemble each console, working under the supervision of the manufacturer's representative.

3.3 FIELD ASSEMBLY

Strict adherence to manufacturer's assembly instructions is mandatory to ensure correct assembly sequence and to avoid misalignment or damaging stresses to various components due to improper weight distribution. Any deviations from written assembly instructions shall be approved by the manufacturer's representative and the Contractor's representative prior to continuation of work. Electrical power wiring shall be connected to facility wiring system by a qualified journeyman electrician. Computer network, communication, and radio wiring shall be connected by the Contractor's representative.

Any components damaged or broken during assembly shall be replaced at no additional cost to the Contractor. If the lack of any replacement component shall affect Subcontractor's critical milestone schedules, replacement component shall be expedited, including shipment via airfreight, if needed.

3.4 FINAL INSPECTION

Prior to final inspection, subcontractor must submit the following:

Operation and Maintenance Data

Operation and Maintenance Manuals, including recommended spare parts, shall be submitted for the following equipment:
Consoles
Credenza
Mapboard Systems

certifying that loading requirements comply.

After final assembly, manufacturer's representative shall conduct a final inspection and demonstration of console features for the Contractor's representative(s). Punch list items of a major nature shall be dispositioned with a corrective action plan, including schedule, with concurrence of the Subcontractor, Contractor's representative, and manufacturer's representative.

-- End of Section --